MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY
TITLE V OPERATING PERMIT TECHNICAL REVIEW DOCUMENT

Permitting and Compliance Division
Air and Waste Management Bureau
1520 E. Sixth Avenue
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Helena, Montana 59620-0901

Montana-Dakota Utilities, Co.
Glendive Generating Station
SE ¼ and Lot 4 of Section 15, Township 15 North, Route 55 East in Dawson County
2001 Merrill Avenue
Glendive, MT 59330

The following table summarizes the air quality programs testing, monitoring, and reporting requirements applicable to this facility.

Facility Compliance Requirements	Yes	No	Comments
Source Tests Required		X	
Ambient Monitoring Required		X	
COMS Required		X	
CEMS or PEMS Required	X		NO_x CEMS or PEMS
Schedule of Compliance Required		X	
Annual Compliance Certification and Semiannual Reporting Required	X		
Monthly Reporting Required		X	
Quarterly Reporting Required		X	
Applicable Air Quality Programs			
ARM Subchapter 7 Preconstruction Permitting	X		Permit #1551-04
New Source Performance Standards (NSPS)		X	
National Emission Standards for Hazardous Air Pollutants (NESHAPS)		X	Except Subpart M
Maximum Achievable Control Technology (MACT)		X	
Major New Source Review (NSR)		X	
Prevention of Significant Deterioration (PSD)		X	
Risk Management Plan Required (RMP)		X	
Acid Rain Title IV	X		
State Implementation Plan (SIP)	X		General SIP

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I. GENERAL INFORMATION

A. Purpose:

This document establishes the basis for the decisions made regarding the applicable requirements, monitoring plan, and compliance status of emission units affected by the operating permit proposed for this facility. The document is intended for reference during review of the proposed permit by the EPA and the public. It is also intended to provide background information not included in the operating permit and to document issues that may become important during modifications or renewals of the operating permit. Conclusions in this document are based on information provided in the original operating permit application submitted by Montana Dakota Utilities Co. (MDU) and received by the Department of Environmental Quality (Department) on August 22, 1997; the Acid Rain Phase II permit application submitted by MDU and received by the Department on March 9, 2001; Permit #1551-01, issued March 6, 1998; Permit #1551-02, issued April 5, 2000; and Permit #1551-03, issued September 25, 2001; the permit modification request received by the Department on September 3, 2002, and the administrative amendment request received on October 15, 2003.

B. Facility Location:

MDU owns and operates the Glendive Generating Station. This facility is located in the SE ¼ and Lot 4 of Section 15, Township 15 North, Range 55 East of the P.M.M. in Dawson County, Montana. Dawson County is designated as an Unclassifiable/Attainment area for National Ambient Air Quality Standards (NAAQS) for all criteria pollutants. The Glendive Generating Station is located approximately 4 miles south of Glendive. The generation site is bordered on the West by Marsh Road. All other boundaries are essentially undeveloped. The Yellowstone River is approximately ½ mile west of the site. The surrounding area within one mile of the site is essentially undeveloped except for an occasional single family dwelling.

C. Facility Background Information:

On July 1, 1977, MDU submitted the original application for construction of Glendive turbine site. This facility was granted a construction permit, Permit #1085, on September 9, 1977. On December 15, 1980, MDU requested a modification to the original permit to allow burning of natural gas as a fuel in addition to burning No.2 fuel oil. On March 3, 1981, the Department issued **Permit #1551** to MDU for the continued operation of the turbine.

On January 8, 1998, MDU submitted additional information to complete Permit Application #1551-01. As part of this application, MDU requested an alteration to increase the hours of operation from 600 hours to 1,050 hours per year. After consultation with the Department and upon further consideration, MDU decided to request an additional increase in the hours of operation and committed to submitting a Title V application within one year.

On March 6, 1998, MDU was issued **Permit #1551-01** for the operation of their Glendive turbine site with updated operating parameters. The Title V application was submitted within approximately 6 months of permit issuance of Permit #1551-01. Title V Permit Application #OP1551-00 was submitted to the Department on August 22, 1997 and **Permit #OP1551-00** was issued effective on October 15, 1999.

On April 5, 2000, MDU was issued **Permit #1551-02** for the addition of fogging and Turbine Ice Peaking Power (TIPP) equipment. The addition of this equipment allowed the combustion turbine to operate more efficiently during periods of warm weather. By adding the new equipment to the facility the actual emissions increased; however, the permitted allowable emissions were not increased.

On March 9, 2001, the Department received the Acid Rain Phase II permit application submitted

by MDU. The acid rain permit is intended to include the requirements contained in 40 CFR Parts 72, 73, 74, 75, 76, 77, and 78. The Department is issuing this permit in accordance with the EPA guidance issued by the Acid Rain Division in October 1997. The draft acid rain permit was issued March 29, 2002, with the comment period ending April 30, 2002.

On September 25, 2001, MDU – Glendive was issued **Permit #1551-03**. The alteration included the installation and operation of an additional multi-fuel turbine, rated at 43-MW capacity. The new turbine, designated as Unit 2, has its own 600-horsepower (hp) diesel starting engine and a fuel tank for the starting engine.

On September 3, 2002, MDU-Glendive submitted a request for a modification to Permit #1551-03. The modification included the installation and operation of a 43-MW General Electric LM-6000 dual fuel turbine instead of a General Electric 43-MW PG6561 dual fuel turbine, which was never installed. **Permit #1551-04** was issued to MDU-Glendive on October 25, 2002.

On January 16, 2003, **Permit #OP1551-01** was issued to incorporate the second turbine (General Electric LM6000 with Dry Low Emission Burners) at the MDU-Glendive facility. The significant modification application originally included a General Electric model PG6561 dual fuel turbine, but was changed to a General Electric LM6000 with Dry Low Emission Burners in a minor modification request (both modifications are included in this action). Permit #OP1551-01 will replace Permit #OP1551-00.

D. Current Permit Action

On October 15, 2003, the Department received a request from MDU for an administrative amendment of OP1551-01 to update Section V.B.3 of the General Conditions incorporating changes to federal Title V rules 40 CFR 70.6(c)(5)(iii)(B) and 70.6(c)(5)(iii)(C) (to be incorporated into Montana's Title V rules at ARM 17.8.1213) regarding Title V annual compliance certifications. **Permit #OP1551-02** replaces Permit #OP1551-01.

E. Taking and Damaging Analysis

HB 311, the Montana Private Property Assessment Act, requires analysis of every proposed state agency administrative rule, policy, permit condition or permit denial, pertaining to an environmental matter, to determine whether the state action constitutes a taking or damaging of private real property that requires compensation under the Montana or U.S. Constitution. As part of issuing an operating permit, the Department is required to complete a Taking and Damaging Checklist. The checklist was completed on October 31, 2003.

F. Compliance Designation:

On May 29, 2003, the facility was inspected by the Department. MDU – Glendive was found to be in compliance with their permit at that time.

II. SUMMARY OF EMISSION UNITS

A. Facility Process Description:

The MDU Glendive Generating Station is used for electrical power generation, transmission, and distribution. The Standard Industrial Classification (SIC) for this facility is "Electrical Power Generation, Transmission, and Distribution" which has an SIC Code of "4911."

The Glendive combustion turbine (Unit 1) is a General Electric Model MS-6000 dual fuel unit.

Name plate rating of the combustion turbine is 34-MW with 38-MW peak capability at optimum conditions. The turbine is capable of maintaining full load using either natural gas or No.2 fuel oil. A Detroit Diesel starting motor rated at 600-hp, burning No.2 fuel oil, is used for starting the turbine.

The new MDU combustion turbine (Unit 2) is a General Electric Model LM-6000 dual fuel unit. The new turbine, rated at 43-MW capacity, has it own 600-hp diesel starting engine and a fuel tank for the starting engine.

The turbines are used to provide electricity during peak electrical demand. These periods are normally short in time duration during summer or winter seasons. The units are capable of sustaining maximum generation for long periods of time when needed.

B. Emission Units and Pollution Control Device Identification:

Currently, the Glendive Generating Station consists of one General Electric MS-6000 combustion turbine (natural gas and/or No.2 fuel oil), one General Electric LM-6000 combustion turbine (natural gas and/or No.2 fuel oil), one diesel starting motor, and three No.2 fuel oil storage tanks. No control equipment is currently in operation on the starting motor, or any of the storage tanks.

Unit 2 is subject to New Source Performance Standards (NSPS) requirements of 40 CFR Part 60, Subpart GG. The turbine will initially (and primarily) burn only natural gas, but will have the capability to also burn No. 2 fuel oil. If No.2 fuel oil is burned in the new turbine, the existing 75,000-gallon diesel (No. 2 fuel oil) tank will be connected to supply fuel to both the existing and the proposed turbine.

C. Categorically Insignificant Sources/Activities:

The Administrative Rules of Montana (ARM) 17.8.1201(22)(a) defines an insignificant emissions unit as one that emits less than 5 tons per year of any regulated pollutant, has the potential to emit less than 500 pounds per year of lead or any hazardous air pollutant, and is not regulated by any applicable requirement other than a generally applicable requirement. The insignificant emitting units at the MDU-Glendive facility are the starting motor, storage tank, and the fugitive emissions from in-plant vehicle traffic.

III. PERMIT TERMS

A. Emission Limits and Standards:

The emission units at this facility are not subject to any current MACT or NESHAP standards. This facility is not subject to PSD regulations. General emission limits apply to the 34-MW General Electric MS-6000. The 43-MW General Electric LM-6000, Unit 2, is subject to the NSPS requirements of 40 CFR Part 60, Subpart GG. MDU will primarily use pipeline quality natural gas in Unit 2, but will have the capability to also burn No.2 fuel oil. If No.2 fuel oil is burned in Unit 2, the existing 75,000-gallon diesel (No. 2 fuel oil) tank will be connected to supply fuel to both Unit 1 and Unit 2. Several of the conditions for both turbines will vary according to the fuel type that is used (refinery quality No.2 fuel oil or pipeline quality natural gas).

An opacity limit of 20% is required for the 34-MW General Electric MS-6000, the 43-MW General Electric LM-6000, the 600-hp Detroit Diesel Starting Motors, and the Fuel Oil Storage

Tanks. This limit was established through ARM 17.8.304(2) for Visible Air Contaminants. A particulate matter from fuel combustion limit is applicable to the 34-MW General Electric MS-6000, the 43-MW General Electric LM-6000 and the 600-hp Detroit Diesel Starting Motors. The particulate from fuel combustion limit was established through ARM 17.8.309.

Additional limits have been incorporated in the permit for sulfur compounds in fuel (gaseous and liquid). The sulfur compounds in fuel (gaseous) limit was established through ARM 17.8.322(5) and is applicable to the 34-MW General Electric MS-6000 and the 43-MW General Electric LM-6000 while burning natural gas. The sulfur compounds in fuel (liquid) limit was established through ARM 17.8.322(4) and is applicable to the 600 Hp Detroit Diesel Starting Motor, the 34-MW General Electric MS-6000, and the 43-MW General Electric LM-6000 while burning No.2 fuel oil.

An operational limit has been placed on the 34-MW General Electric MS-6000. The operational limit is dependent upon the type of fuel that is being used. If natural gas is being used exclusively, then the operational limit for the turbine is 2,620 hours per any rolling 12-month time frame. If refinery quality No.2 fuel oil is being used exclusively, then the operational limit for the turbine is 1,667 hours per any rolling 12-month time frame. If a combination of pipeline quality natural gas and refinery quality No.2 fuel oil are being used, then the operational limit for the turbine will be some amount of time between 1,667 and 2,620 hours per any rolling 12-month time period, depending on how long each fuel type is used.

An operational limit has been placed on the 43-MW General Electric LM-6000. The operational limit is dependent upon the type of fuel that is being used. If natural gas is being used exclusively, then the operational limit for the turbine is 6500 hours per any rolling 12-month time frame. If refinery quality No.2 fuel oil is being used exclusively, then the operational limit for the turbine is 3254 hours per any rolling 12-month time frame. If a combination of pipeline quality natural gas and refinery quality No. 2 fuel oil are being used, then the operational limit for the turbine will be some amount of time between 3254 and 6500 hours per any rolling 12-month time period, depending on how long each fuel type is used.

A NO_X emission limit of 225 tons per any rolling 12-month time period has been placed on Unit 1 and its associated startup engine. The total emissions of NO_X are derived through several steps 1) multiplying the hours of operation of the 34-MW General Electric turbine while using natural gas by the most recent source test on file with the Department of the 34-MW General Electric turbine while burning natural gas (results will be in lb/yr); 2) multiplying the hours of operation of the 34-MW General Electric turbine while using No.2 fuel oil by the most recent source test on file with the Department of the 34-MW General Electric turbine while burning No.2 fuel oil (results will be in lb/yr); 3) add the results of 1) and 2) and divide by 2000 to convert to ton/yr; 4) add the total NO_X from the 34-MW General Electric to any other NO_X emissions from the site and compare the result with the 225 ton per any rolling 12-month time period limit.

A NO_X emissions limit of 247 tons per rolling 12-month period has been placed on Unit 2 when combusting pipeline quality natural gas, No.2 fuel oil, or a combination of pipeline quality natural gas and No.2 fuel oil. Any calculations used to establish NO_X emissions shall be approved by the Department.

Unit 2 has a NO_X emission limit of 76.0 pounds per hour and a CO emission limit of 17.0 pounds per hour while combusting pipeline quality natural gas. Unit 2 has a NO_X emission limit of 151.8 pound per hour and a SO_2 limit of 90.8 pound per hour while combusting No.2 fuel oil.

One additional limit was placed on the 34-MW General Electric MS-6000 and the 43-MW General Electric LM-6000. Only refinery quality No.2 fuel oil or pipeline quality natural gas may be used as fuel for the 34-MW General Electric MS-6000 and the 43-MW General Electric LM-6000.

B. Monitoring Requirements:

ARM 17.8.1212(1) requires that all monitoring and analysis procedures or test methods required by any applicable requirement be contained in the operating permit. In addition, when the applicable requirement does not require periodic testing or monitoring, periodic monitoring must be prescribed that is sufficient to yield reliable data from the relevant time period that is representative of the source's compliance with the permit. The requirement for testing, monitoring, recordkeeping, reporting, and compliance certification sufficient to assure compliance does not require the permit to impose the same level of rigor for all emissions units. Furthermore, it does not require extensive testing or monitoring to assure compliance with the applicable requirements for emission units that do not have significant potential to violate emission limitations or other requirements under normal operating conditions.

When compliance with the underlying applicable requirement for an insignificant emissions unit is not threatened by lack of regular monitoring and when periodic testing or monitoring is not otherwise required by the applicable requirement, the status quo (i.e., no monitoring) will meet the requirements of ARM 17.8.1212(1). Therefore, the permit does not include monitoring and/or recordkeeping for all generally applicable requirements such as ARM 17.8.304, 309, 322, 324, and 710. However, the Department may request additional testing to determine compliance with the emission limits and standards. If it is determined through testing, using test methods identified in the Montana Source Testing Protocol, that any emissions unit is out of compliance with any applicable requirement, MDU will not be shielded from an enforcement action even if the required monitoring methods listed in the permit indicate compliance with the applicable requirement. Since the fuel consumed by the emission units is pipeline quality natural gas and No.2 fuel oil, the potential to exceed the opacity, particulate, or sulfur in fuel conditions in this permit is negligible. However, while burning No.2 fuel oil, MDU shall provide a fuel analysis from the fuel provider on a semi-annual basis to demonstrate compliance with sulfur compounds in fuel requirements (gaseous and liquid). Furthermore, the recordkeeping provisions of this permit should demonstrate compliance with the permit conditions.

C. Test Methods and Procedures:

This operating permit contains requirements for performing Method 9 tests as required by the Department. Method 9 tests must be performed in accordance with the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106). Each observation period must be a minimum of 6 minutes unless any one reading is 20% or greater, then the observation period must be a minimum of 20 minutes or until a violation of the standard has been documented, whichever is a shorter period of time.

D. Recordkeeping Requirements:

The recordkeeping provisions shall be sufficient to meet the provisions of the monitoring requirements and shall include, as necessary, the installation, use, and maintenance of the monitoring equipment or methods. The following information shall also be provided as necessary: the date the analyses were performed, the place and time of the sampling, the company or entity performing the sampling, the analytical techniques or methods used, the results of such

analyses, and the operating conditions at the time of the analyses. Retention of the records of all required monitoring data and support information shall be for a period of at least five years from the date of measurement. Support information includes all calibration and maintenance records and copies of all reports required by the operating permit.

E. Reporting Requirements:

MDU is required to submit, to the Department, reports of any required monitoring at least every six months and to annually certify compliance with the applicable requirements contained in the permit. All deviations from permit requirements must be clearly identified in these reports. All reports must be certified by a responsible official. The permittee is also required to promptly report any deviations from the permit requirements due to upset conditions and the probable cause of the upset condition along with any corrective actions or preventive measures taken.

IV. NON-APPLICABLE REQUIREMENTS ANALYSIS

Section IV of the operating permit "Non-applicable Requirements" contains the requirements that the Department determined were non-applicable. MDU did not identify any non-applicable requirements on a facility-wide basis or an individual emissions unit basis.

Although Section IV of the operating permit lists numerous federal requirements that are not applicable to the MDU facility, several required a more detailed analysis. Specifically, Subparts K, Ka, and Kb do not apply to the facility because of the following:

A. The No.2 Fuel Oil Storage Tank with Source ID #3 (75,000 gallon capacity) is not an NSPS source as identified in 40 CFR 60, Subparts K and Ka because the date of manufacture of the tank excludes these subparts. According to date only, Subpart Kb would apply to the facility. However, because the capacity of the tank is greater than 151 m^3 (39,894.2 gallons) and because the No.2 Fuel Oil has a true vapor pressure less than 3.5 kPa (actual vapor pressure is 0.04 kPa), this tank is exempt from the General Provisions and the provisions of Subpart Kb.

   Although the capacity of the No.2 Fuel Oil Storage Tank (Source ID #3) is greater than 65,000 gallons, ARM 17.8.324 does not apply because the vapor pressure of the distillate is less than 2.5 psia. Since ARM 17.8.324 is not applicable, the tank is not required to install one of the vapor loss control devices mentioned in the rule.

B. The No.2 Fuel Oil Storage Tank with Source ID #4 (200 gallon capacity) is not an NSPS source as identified in 40 CFR 60, Subparts K and Ka because the capacity of the storage vessel is well below the 40,000-gallon cutoff. The year of manufacture of the tank was not provided, but due to the size of the tank, these subparts do not apply. Source ID #4 is not an NSPS source as identified in 40 CFR, Subpart Kb because the capacity of the storage vessel is well below the 40 cubic meter cutoff.

   The provisions of ARM 17.8.324 do not apply to Source ID #4 because the tank has a capacity less than 65,000 gallons.

C. Furthermore, 40 CFR 60, Subpart GG does not apply to the MDU Glendive Turbine because the facility commenced construction prior to October 3, 1977. Subparts KKK and LLL do not apply because the facility does not process natural gas. The remainder of the subparts listed in Section IV of the operating permit do not apply because the facility is not an affected source as defined in these regulations.

V. FUTURE PERMIT CONSIDERATIONS

A. MACT Standards:

As of November 7, 2003, Subpart YYYY – Combustion Turbines (promulgated August 29, 2003) is potentially applicable to the MDU Glendive facility.

B. NESHAP Standards:

As of November 7, 2003, the Department is unaware of any future NESHAP Standards that may be promulgated that will affect this facility.

C. NSPS Standards:

As of November 7, 2003, the Department is unaware of any future NSPS Standards that may be promulgated that will affect this facility.

D. Risk Management Plan:

As of November 7, 2003, this facility does not have any substance listed in 40 CFR 68.115 or 40 CFR 68.130, which exceeds the minimum threshold quantities. Consequently, this facility is not required to submit a Risk Management Plan.